

# Can banking innovations lead to new financial crisis: case of Central and Eastern Europe

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## Abstract

The article analyzes the latest trends in the development of banking innovations and interdependence between the development of the real economy and the banking sector in Poland, Hungary, Czech Republic and Slovakia, which are similar to the Ukraine on the development of banking systems and the economy. We determined that now, key tendencies related to the development of banking innovations are: 1) expanding and deepening banking regulation; 2) changing customer expectations; 3) growth of technology impact on risk management in banks; 4) development of new risk types; 5) search for decision-making methods that assess and take into account variations in the behavior of economic subjects; 6) cutting banking costs.

It is determined that for today there is no objective reason to assert the existence of a real threat to the stability of banking systems, caused by the development of banking innovation. At the same time, fast evolution of financial and banking systems, will make us to revise the results of this research in the nearest future.

**Keywords:** banking innovations, banking crisis, financial stability, the causes of the crisis, the probability of crisis.

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## Introduction

Typically, financial crises are characterized by a decrease in the liquidity of financial and credit institutions, increase in non-payments, delay in banks' performance of their obligations, increase in the proportion of "bad" credits, loss-making or reduction in income of financial operations, often bankruptcies of financial intermediaries. The banking crisis is accompanied by a significant outflow of term and current deposits, curtailment of crediting, growth of interest rates and the level of currencyization of the economy, reduction of consumer demand and volumes of production. At the same time, the modern market of banking services is constantly looking for effective transformations to modernize and take into account the latest achievements of the real economy. The demand of a real economy for fundamentally new financial and banking services leads to the appearance of such ones outside the banking system. It occurred with the appearance of Bitcoin, responding to the growing demand for confidentiality and freedom of financial operations. Another example of the development of financial services beyond the banking and traditional financial system was the development of a large number of fundraising platforms that met the market demand for financing venture and social projects. On the other hand, banks try to modernize their own product policy and introduce new innovative approaches to banking services to hold cash flows in their own orbit. This often leads to the imbalance in the management system in banks and loss of control over risk-causing factors, which can lead to the banking crisis as a result. *The aim of the article* is to analyze current trends in banking innovations and assess their impact on the probability of emerging banking crises on the example of the countries of Central and Eastern Europe.

## Literature review

In scientific and analytical literature a lot of attention is paid to the analysis of the causes and consequences of banking crises and, in particular, T.A. Vasilyeva [4] and D.L. Tsyhaniuk [10] among the key reasons leading to the escalation of financial and economic crises determine the activation of cross-border credit and investment flows, volatility of the national currency. V.M. Kochetkov [6] and P.V. Melnyk [7] consider that the

main problem of the banking systems of the countries of Central and Eastern Europe is their excessive dependence on large transnational banks, which damage the national interests of the countries by their own risk policy. M.I. Karlin [5] and S.V. Fedonyuk [9] note that the characteristic feature of the Polish economy before the crisis of 2008-2009 was the rapid growth of domestic demand (more than 40%), which was ensured by a corresponding increase in consumer crediting. Djalilov K., Lyeonov S., & Buriak A. [1] prove that one of the crisis factors in the banking systems of Central and Eastern European is the low level of competition (high concentration), under such conditions the technological efficiency of banking activity leads to reduction in the efficiency of banks and increases the risk of their activities, especially in the turbulent period. D.Marques-Ibanez and M. van Leuvensteijn [12] state that in times of intense banking competition the financial innovations can intensify the adverse effects of competition for stability.

David T Llewellyn [13] concluded that the benefits of financial innovation and the extent to which new instruments mitigate risk are frequently over-stated in two respects: (1) an exaggerated view about the extent to which they mitigate particular risks, and (2) a failure to appreciate that, even when particular risks are shifted, they may do so at the expense of creating different risks. Periods of collective euphoria tend to induce herd behaviour. Demirguc-Kunt and Detragiache (2005) find that the likelihood of crises increases with the strength and duration of economic booms. Weak internal risk analysis and management systems tend to emerge in periods of collective euphoria. However, despite the high level of attention of domestic and foreign scientists to the genesis of financial crises, certain issues, in particular regarding the consideration of the role of banking innovations in stimulating the crisis-causing factors and their influence on the probability of forming the banking crisis in a certain form taking into account the specifics of the organization of the local banking market, require more detailed study and analysis.

### **The main findings of the study**

The processes of globalization of the world financial system are characterized by a higher level of volatility than analogous processes in the political, commercial, and cultural spheres. At the same time, the role of financial systems in the development of the world economy is growing. If we analyze the processes of de-bordering between countries, then financial borders disappear the first, later – trade ones, then disappear political borders and only at the very end - physical ones. The development of international trade has led to the need for free movement of capital, primarily financial capital. Accordingly, for many decades the efforts of the states were aimed at creating such national financial systems that, on the one hand, would freely allow financial capital to enter the country, and, on the other, would create certain barriers for its outflow from the country. At the same time, capital owners have stimulated the creation of such financial instruments that would not be too much limited by national governments. Of course, the focus of this struggle is the banking system of the country.

In this article we will consider the case of separate countries of Central and Eastern Europe, namely Poland, Hungary, Czech Republic and Slovakia. In our opinion, the banking systems of these countries are largely similar to the banking system of Ukraine. In particular, it is connected (in comparison with other European countries) to small volume of assets of banks, large shares of assets of foreign banks, presence of the same international banking groups (for example, Raiffeisen, Unicredit, BNP Paribas, Credit Agricole, etc.). Another factor that, in our opinion, makes it necessary to analyze the banking systems of these countries is their level of integration into the European financial system and the global financial system as a whole. As it follows from the current economic policy of Ukraine, the domestic banking system is waiting for such integration in the nearest future.

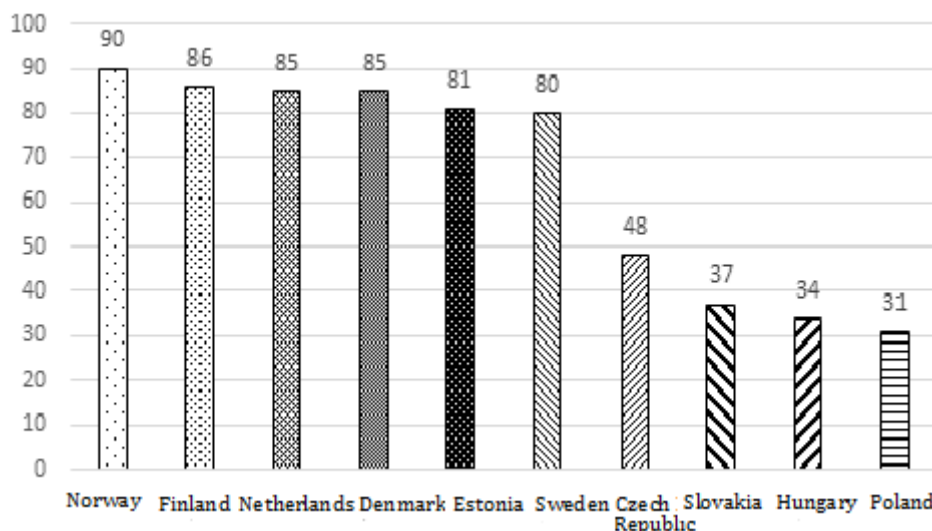
The banking system guarantees the country's financial and economic security, its independence from the global market conditions and makes it less sensitive to global financial crises. In many ways, the efficiency of the banking system in providing the above mentioned functions depends on the risk-management system in banks. In order to understand what risks will arise in the nearest future for banks, global trends in the development of financial services should be analyzed. Analysis of various sources of scientific and statistical literature [1, 2, 3, 5, 10] allows to suggest that the following structural trends in the development of the financial sector of the world are relevant today:

1. Expanding and deepening banking regulation. If in 2008-2009 the attitude of the public and the state to the bankruptcy of banks was rather restrained, nowadays none of them have any desire to save banks at

the expense of taxpayers. Consequently, the public attitude to the riskiness of banking operations will become increasingly rigorous, and the attention of controlling bodies - more and more careful.

Another factor that causes the need to strengthen banking regulation in the nearest future is the intensification of the international fight against terrorism financing and laundering money received by criminal way. In this context the role played by banks in ensuring the efficiency of the tax system and the transparency of financial operations is also important.

2. Changing customer expectations. In recent years changes in consumer expectations and customer service technologies have led to a radical change in the profile of banking services. If even 10 years ago digital banking was a competitive advantage, today it is a norm in the banking sector. As a result, a bank with limited or no digital banking is generally perceived as a relic of the past (Figure 1).



**Figure 1. Share of the population having access to and using online banking services as of year-end 2015**

Source: [2]

As can be seen from Figure 1, some European countries have already reached a rather high level of digital banking, but there is considerable space for growth in this direction for Central and Eastern European countries.

Over the last two years, the number and usage of innovations in the banking sector has grown significantly. This is confirmed also by the increase of investments into financial and technological start-ups. It should be noted that financial and technological start-ups have no desire to turn into full-bodied banks, while they focus on establishing direct customer ties, thus creating competition with traditional financial intermediation.

3. Technology impact on risk management in banks. This trend is formed again with the development of technical and analytical innovations. The collection and sharing of large amount of information on customer behavior and preferences enabled banks to apply global data analysis models and integrate them into risk-management systems. Access to such information allows to predict not only changes in demand, but also other risk-causing factors for the timely development of preventive measures. In addition, developed banks begin to make extensive use of machine learning, primarily in promoting their banking products, which reduces the risk of incorrect customer choice of banking services and improves approaches to assessing creditworthiness. In this context, crowdsourcing is also started to be used, not in terms of co-financing a particular project, but in terms of joint solving a particular problem, for example, improving models of car accident risk assessment used by insurance companies. Such approaches open up new opportunities for the transformation of risk-management systems in banks.
4. Development of new risk types. The development of innovations in the financial sector leads to the emergence of new opportunities, which, as well can be used against banks or their clients. Among the new risks that can be marked today are the risk of financial contagion (the spread of negative financial trends from a neighboring country, region, industry, etc. due to deep informational interconnection), the risk of models (today, when developing a strategy, banks are guided by certain models of behavior, including in risk management, therefore, the wrong choice of the model will lead to incorrect decisions, and the change

in the model of behavior – to significant losses), cyberattacks (especially relevant during geopolitical changes).

5. Search for decision-making methods that assess and take into account variations in the behavior of economic subjects. With the development of technology, the logic of behavior of economic subjects changes, which leads to the fact that it becomes increasingly difficult to predict it and to identify the reasons for changing such behavior. As a result, there is a need to select and integrate a variety of methods for making managerial decisions, which will be also based on actual (analytical) data, on the results of mutual search and discussions including the general organizational logic.
6. Cutting banking costs. This trend is conditioned upon such factors as increased competition from financial and technological start-ups, reduced additional cost in the structure of debt capital, increased risk management costs.

As we see, current trends in the development of the banking sector and the directions of the development of banking innovations cause the emergence of a large number of crisis-causing factors provided that on international scale. However, the purpose of our article is to assess the impact of banking innovations on the probability of banking crises, therefore in our opinion, first of all it is necessary to distinguish the fundamental factors characterizing the development of the banking system and the economy as a whole, by dividing them into the following groups:

1. indicators characterizing the development of the economy;
2. indicators characterizing the development of the banking system;
3. indicators characterizing the level of reliability and efficiency of the banking system;
4. indicators characterizing the level of competition in the banking system.

The present groups of indicators in the complex reflect the result of the influence of non-financial factors on the activity of the economy and the banking system. The analysis of the interconnections of these indicators [4, 9, 10] during the development of the crisis of 2008-2009 and the post-crisis development of Poland allowed to make the following conclusions:

1. The deterioration of the financial and economic situation after the end of the crisis of 2008-2009 is due to the predominantly slow growth of financial and commodity markets after the crisis in European countries, which are key trade partners of Poland;
2. Slow growth of Poland's GDP after the crisis was caused by the economic recession in Europe and the reduction of investment in the economy;
3. During the crisis there was a negative tendency towards the reduction of the level of employment.

The positive factors that reduced the impact of crisis phenomena on the Polish economy over the period of study include:

1. Conducting effective economic reforms during the period prior to the global financial and economic crisis;
2. Soft monetary policy during the crisis and post-crisis periods, which reduced the negative impact on the real sector of the economy;
3. Devaluation of the national currency, which has created competitive advantages for exporters;
4. Increasing the purchasing power of the population, which with the parallel reduction of imports has led to the growth of consumption;
5. Low ratio of foreign credits in the structure of resources of the banking system of Poland [9].

Thus, it should be noted that the crisis of 2008-2009 was formed by fundamental factors and the development of banking innovations did not have a tangible impact on those processes that took place in the banking system and the economy of Poland as a whole.

In the Czech Republic, as a result of clearing the bank balances from bad assets because of their repurchase by the government at the expense of the budget and further infusions to the capital of banks by strategic investors, most banks today have a stable financial position and sufficient level of profitability. In the course

of pre- and post-crisis reforms, the quality of the credit portfolio and risk-management system has been substantially improved. This led to a sharp reduction in the ratio of bad credits. The ratio of high-liquid assets in total assets of banks, which is an important condition for further development of banking in the country has significantly increased [11]. It is worth mentioning that the increase in assets was mostly due to traditional instruments (mainly short-term credits and highly liquid securities), which in general corresponds conclusions of S.V. Lyeonov and A.V. Buriak [1], because the Czech Banking system is a highly concentrated system, and therefore it is not characterized by a high tend of banks to risk and, as a consequence, active introduction of financial and technological innovations. And those innovations which were implemented mainly concerned the management system and risk management in banks.

Hungary has long been an example of a neo-liberal transformation in Central and Eastern Europe. However, when the results of financial crisis in 2008-2009 became obvious, Hungary's reputation in international business and political circles got worse rapidly. As a result, the international press called it "black sheep" of the current crisis. All signs traditionally associated with the global crisis, namely the collapse of the financial system, falling production volumes, rising unemployment and social inequality, spreading frustration and social discontent, were present in difficult forms in Hungary [8]. Similarly to the Czech Republic, Hungary has also a banking system with a high level of concentration that has resulted in the absence of alternative (innovative) ways of accumulating assets amid the general fall in the volume of traditional crediting and the level of creditworthiness of economic subjects.

The main characteristics of the banking system in Slovakia, which accounts for almost 75% of assets in the entire financial system, is almost full control from the part of foreign investors. In the last pre-crisis years the banking system of Slovakia has somewhat diversified. So, on the eve of the crisis, in 2007, 97% of banks were under foreign control, and the ratio of assets of state-owned banks was only 1%. The concentration on the banking market in Slovakia is quite high - the 4 largest banks have about 65% of assets. In the mortgage lending sector, the concentration is even larger - the share of the four largest banks is 85% [6]. Such a structure could create threats to the stability of the banking system of Slovakia, increasing its vulnerability to external risks and dependence on external financing. However, the Slovak banking system has demonstrated high stability during the crisis. In particular, it managed to avoid significant capital flows between parent banks in Central and Western Europe and their affiliates in Slovakia. A positive role was played by the specific model of the banking system in Slovakia, which has inherent reliance on the domestic deposit base and restrictions on investing in foreign securities, and the ratio of credits to deposits does not exceed 100%.

Thus, it can be assumed that the traditional causes of banking crises are economic crises, monetary crisis or specific crises in the financial or large commodity markets. As a rule, the impulses of the banking crisis are the external factors that cause a rapid devaluation of national currencies, a significant deficit of the state budget, panic in the banking market, stock markets crises, high inflation, depreciation of bank deposits and financial assets.

Internal factors typically include a low level of bank capitalization, weak systems of corporate governance and risk management, a significant dependence on external crediting sources, inefficiencies in banking regulation and control.

The analysis of the dependence of financial stability of the banking systems of the countries of Central and Eastern Europe from the fundamental economic indicators [10] showed insignificant role of internal factors, conditioned by a high level of external dependence of the studied banking systems and a high degree of integration into the European financial system. At the same time, we can state the lack of noticeable influence of banking innovations (first of all financial and technological) on the growth of bank risks, moreover, there is an indirect indication that banking management innovations (introduction of new approaches to risk estimation and management) contribute to the reduction of the general level of bank risks.

## Conclusions

Having considered all the crisis-causing factors, we have made the conclusions that we give below for each country.

**Czech Republic.** The banking system in this country has shown an example of a successful crisis overcoming and extreme sustainability in hard times. The basis for such sustainability was the focus on crediting the consumer and commercial sectors of the national economy. Czech banks show stable profitability and rely on an



internal deposit base, the ratio of deposits to credits constantly exceeds 100%. The crisis of 2008-2009 practically did not affect the stability of the Czech banks.

**Poland.** Today, the overall situation in the banking sector is stable. Profit is growing, the level of owner's capital adequacy on the average in the banking system is 14%, non-working assets at the end of 2010 rose to 9% and since then remain at the same level. The volumes of credits granted to the private sector are increasing. It is also possible to note the active growth of population deposits attracted by banks. The ratio of deposits to credits is about 90% with the general trend of growth.

**Hungary.** At present, the banking sector of Hungary has not overcome the consequences of the crisis: the share of bad credits remains high. The ratio of deposits to credits is 77%. The share of long-term credits in foreign currency (Euros and Swiss francs) is 65%, with a tendency to devaluation of forint. At the same time, Hungary has a high level of financialisation, which in general can lead to severe consequences for the real sector of the economy.

**Slovakia.** The general situation in the banking system is stable. An important factor in the sustainability of the Slovak banking system is a balanced structure of assets and liabilities. In the structure of the assets portfolio, the main ratio make loans (61%), which are almost evenly diversified between the corporate and the consumer sector. During the crisis, the domination of consumer crediting was observed. The share of mortgage credits in the total credit portfolio is about 31.5%, which does not exceed 20% of total assets of the banking system. Slovakia is a member of the Eurozone, which causes a low share of credits and deposits in foreign currency.

Analyzing the impact of innovative trends in the banking sector on the beginning of crisis phenomena in the studied countries, it should be noted that in general in all countries there is an increase in the risk of choosing the wrong model of banking business. However, this risk appears to a lesser extent to be in those countries where large multinational banks dominate. In general, today there is no reason to state that the risks generated by the development of banking innovations can lead to a financial or banking crisis in the countries of Central and Eastern Europe. However, taking into account the speed of the evolution of banking and financial systems, it is possible that in 5 years such risks will be determining ones.

In prospect, it is important to conduct a more profound and detailed analysis of the impact of the introduction of banking (financial and technological) innovations on the structure and nature of bank risks, in particular on liquidity risk and credit risk. But for this it is necessary that at least another 2 years will have passed to provide a relevant statistical basis for analysis.

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